31 August 2006

Call for advice from the European Commission on large exposures

Report on industry practices

Background

1. In December 2005, CEBS received a Call for Advice from the European Commission ('the Commission'), asking for technical advice to inform the Commission's review of the Large Exposure ('LE') rules in the Capital Requirements Directive (CRD). This review is being conducted in the context of Article 119 of the CRD, which directs the Commission to submit a report on the functioning of the Large Exposures rules, together with any appropriate proposals, to the European Parliament and the Council by 31 December 2007.

2. The Commission called for technical advice on three points:

   a. Point (a) asked for a stock-take on the range of supervisory practices among Member States in the implementation and national application of the LE rules.

   b. Point (b) called for an industry consultation on market practices for large exposures. The Commission stated that the consultation should cover the full range of banking and trading activities and should address the needs of both smaller and larger firms. The Commission further indicated that particular outputs of the industry consultation should include:

- An analysis of the measure(s) of exposure used by firms for monitoring concentration risk as well as the horizon over which this risk is assessed

- An analysis of the manner in which firms address large exposures (e.g. specific capital reserves, use of credit risk mitigants, etc.)

c. Point (c) requested an analysis of the types of credit risk mitigation products that impact on the calculation of what constitutes a large exposure. The Commission stated that this analysis should be both quantitative and qualitative in nature, contemplating credit risk mitigation techniques used in the banking and trading books of both smaller and larger firms.

3. In addition to calling for specific technical advice, the Commission welcomed advice from CEBS on two further areas of work that will form part of the Commission's LE review:

- Analysis of the fundamental prudential principles upon which LE monitoring methodologies and reporting requirements could be based, and

- Whether and to what extent good credit risk management should be recognised and/or rewarded within LE rules.

4. On 27 April 2006, in response to point (a), CEBS submitted to the Commission the results of its survey of current supervisory practices. The final report on supervisory practices is available on CEBS' website (http://www.c-ebs.org/Advice/LE_report.pdf).

5. The present document presents CEBS' report on points (b) and (c). It includes a significant section on industry practices in the use of credit risk mitigation (CRM) to manage large exposures (point (c)). The more fundamental analysis on how CRM modifies the calculation of what constitutes a large exposure is linked to, and indeed follows from, the analysis of the fundamental prudential principles which is also requested in the Call for Advice. Accordingly, the fundamental analysis of CRM will be covered when CEBS addresses fundamental prudential principles. CEBS is still considering what advice to submit on prudential principles and on the recognition of good credit risk management.

6. In the report on supervisory practices mentioned above, CEBS noted that the (then) forthcoming work on industry practices would facilitate an assessment of the gap between the regulatory framework and industry practices, and thus would provide a basis for considering how to improve the regulation of large exposures. The present report therefore also provides feedback on industry's earlier views on the current regulatory environment.

7. In response to industry concerns related to the original tight timeline, the Commission extended its deadline for submission of the technical advice, originally set at 30 June 2006, to 31 August 2006.

Methodology

8. The Call for Advice mentioned an "industry consultation" on current LE practices. However, it seems clear from the text of the Call for Advice that the Commission's intent was that CEBS should collect information on industry practices, as opposed to seeking industry reaction to a specific proposal (the usual meaning of "consultation"). Accordingly, CEBS has conducted a survey of market participants, using an on-line questionnaire that was posted on CEBS' website (http://www.c-ebs.org/Advice/LE_questionnaire.pdf). The responses to the questionnaire have also been posted on CEBS' website (http://www.c-ebs.org/Advice/LE_response.htm) unless the respondent requested otherwise.

9. While the central focus of the Call for Advice was on single-name concentration risk, the Commission stated that its review of LE rules is intended to be wide-ranging. CEBS took this to mean that the survey of industry practices should also be wide-ranging. CEBS therefore structured the questionnaire to cover concentration risk more generally (including sectoral and geographic concentrations as well as single-name concentration), with the goal of gaining a better understanding of the relationship between these two areas in industry practice.

10. The questionnaire was designed to give market participants the opportunity to provide as full and detailed descriptions and explanations of their practices as possible. Respondents were asked to frame their responses and comments from the perspective of the individual institution, while also highlighting any differences that may exist at group level.

11. The questionnaire covered the following topics:

    (i) Approaches to measuring and managing single-name concentration risk,

    (ii) Approaches to measuring and managing 'other' concentration risk (sectoral, geographic),

    (iii) Approaches to calculating large exposures,

    (iv) the assessment of connectedness of exposures,

    (v) the group-level issues,

    (vi) The use of credit risk mitigation techniques to reduce single-name concentration risk

    (vii) Internal governance and reporting practices, and

    (viii) The respondent's views of the current large exposures regulatory regime.

12. In addition to conducting its own on-line survey, CEBS encouraged competent national authorities in CEBS member countries to engage a

representative sample[1] of institutions within their jurisdiction in a dialogue on LE practices and to forward the results to CEBS. The information collected in this process is summarised in country reports attached to this report. In order to maintain the confidentiality of the information provided by individual institutions, the country reports have been edited by CEBS members so as to make the references to institutions anonymous.

13. CEBS conducted an informal dialogue with experts designated by the CEBS Consultative Panel and with representatives of the main European banking groups, to get early views on the main findings of the survey and on the wider issues raised in the review of the LE regime.

Scope

14. In addition to the information provided by banking associations, CEBS has collected information from more than one hundred credit institutions and investment firms located in nineteen EU Member States. [2]

15. Information has been collected from small, medium-sized, and large institutions, either on an individual basis, through contacts with their national supervisors, or both. Broadly speaking, a quarter of the participants were Group 1 institutions and the rest of them Group 2 institutions as those terms are used in QIS 5. [3]

16. Participants included universal banks involved in a wide range of banking activities, as well as banks specialised in specific activities such as mortgage lending, commodities trading, factoring, and investment funds management.

17. Information was also collected from investment firms specialising in structured finance, institutions active in public sector credit and capital market activities or debt derivative trading, and cooperative and savings banks.

18. Information was collected from both banking groups and stand-alone institutions, providing insight in to the group and individual firm perspective of concentration risk management. Similarly, the information provided by internationally-active institutions provides insight on the challenges posed by concentration risk management in a cross-border environment.

[1] Representative both in terns of their position in the market and of the large exposures practices in that country.

[2] Austria, Belgium, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, Portugal, Slovenia, Spain, Sweden, the United Kingdom

[3] Group 1 banks are banks which fulfil the following three criteria: the bank is internationally active, it is diversified, and it has original own funds in excess of €3 billion. Group 2 banks are all other banks. These criteria have been used to get an idea of the representativeness of the participating institutions. It does not mean that these institutions participated in the QIS 5 exercise.

19. The level of details provided was broadly satisfactory, although detailed descriptions on, for example, economic capital models, the methods of calculation, or stress tests were not always provided.

20. On the basis of the information collected, CEBS gives a factual snapshot of the industry practices currently used in Europe. It is not the purpose or the intention of this report to give any judgment on its main findings.

Executive summary

21. Measuring and managing concentration risk is an important, if not the most important, part and prime objective of the credit risk management framework of the surveyed institutions. Institutions appear to share substantial core commonalities with regard to their approach to measurement and management of concentration risks. The survey also shows that there is a wide range of industry practices, the key differences lying more in the area of the (i) the sophistication of the methods of calculation, (ii) the nature, size, and riskiness of the activity and (iii) risk strategy.

22. The main detailed findings of the survey are:

Part 1. Approaches to the measurement and management of single name concentration risk

23. Single name concentration risk is generally defined as a single exposure or group of closely related exposures that has the potential to produce large losses relative to an institution's capital, total assets, or earnings, or that threatens the institution's ability to maintain core operations.

24. Almost all respondents use an approach based on notional/nominal exposure limits. A significant number of respondents – mostly but not exclusively larger or more sophisticated institutions – indicated that they also use approaches based on economic capital models.

25. A number of tools are used to manage single-name concentration risk:

- Internal limits: many institutions, particularly smaller ones, set internal limits that are identical to or derived from regulatory limits. However, most large institutions, as well as some smaller institutions, set internal limits for single names that differ significantly, in metric, as well as magnitude, from regulatory requirements. Many of these institutions stated that their internal concentration risk limits were more conservative and more risk-sensitive than those set by national regulators. Creditworthiness is a key factor for many institutions in setting limits.

- Stress testing: is conducted at a number of institutions throughout the EU – predominantly large or medium-sized institutions, often in only some markets, and even there not in all cases.

26. In a number of institutions, single-name concentration risk is managed alongside the measurement and management of 'other' concentration risk,

such as sectoral and geographic risk. Accordingly, a sharp distinction is not always apparent in the management of single-name concentration risk and "other" concentration risk.

Part 2. Approaches to the measurement and management of "other" (sectoral, geographic) concentration risk

27. 'Other concentration risk' is generally understood to be the risk arising from a group of exposures that share the same underlying risk factors (exposures in the same sector or the same geographical region) such that a deterioration in the common risk factors could affect the ability of all the counterparties to service their debt.

28. Defining the relevant sectors and geographical areas is one of the first steps in managing concentration risk. While institutions seem to identify the country risk mainly with objective/factual indicators, delineating a 'sector' seems to prove more judgmental.

29. Institutions reported a mixture of tools and approaches to addressing 'other concentration risk,' including limits, distribution charts by sectors, reporting, judgemental considerations around high-risk areas. Some of the more sophisticated institutions use methodologies based on internal economic capital or VaR models. The most sophisticated institutions conduct stress tests using capital models. When using stress tests, less sophisticated institutions also take different scenarios into account in their analysis, but using simpler methods. It was noted that stress tests are a tool adopted to help identify and manage a broad spectrum of risks, not always specifically concentration risks.

Part 3. Exposure calculations

30. Nearly all institutions define exposures in conformity with the large exposure provisions of the CRD: i.e., as on and off-balance sheet items (banking book) and settlement and delivery risk (trading book). However, institutions have different approaches to calculating the value of exposures.

31. Only a few respondents explained their calculation methods in detail, making it difficult to characterize industry practice. Based on the responses received, it appears that:

    a. Some smaller institutions use an approach closely aligned with the regulatory approach.

    b. Larger institutions, while adhering to regulatory requirements, reported using more sophisticated approaches. These include internal models calculating peak potential future exposure, value at risk models, and Monte Carlo simulation.

32. There appear to be a variety of calculation methods in use across the EU for almost all types of transactions: derivatives, settlement exposures, intra-day exposures, structured transactions, securities financing transactions, etc.

Part 4. 'Connected' Counterparties

33. Connectedness of counterparties is often determined on the basis of common/legal direct or indirect ownership, management control, or financial dependencies. As connectedness is often not easy to determine, many institutions, of all sizes, determine connectedness on a case-by-case basis, using a range of information sources and indicators varying in importance coupled with expert judgements.

Part 5. Group-level issues

34. Most institutions measure and manage concentration risks both at group and single-entity level, where applicable. However, it appears to be common practice for large institutions to manage and set limits only at group level. These limits are often allocated to different business lines and legal entities. At many large institutions, policies for measuring and managing concentration risks are determined by the senior management at the top level of the group.

35. Some of the respondents reported that they include intra-group exposures in their measurement and management of concentration risks, often in almost the same way as for other concentrations. But in many institutions, intra-group exposures commonly lie outside the scope of the credit risk function. Many large groups do not appear to set limits on intra-group exposures as part of their credit risk management - instead they manage intra-group exposures as part of their overall management of resource allocation within the group.

Part 6. Credit Risk Mitigation

36. Many respondents reported that they use credit risk mitigation to reduce their concentration risk. The sophistication of the methods used varies depending on the size of the institution. Some respondents flagged that there is a gap between the range of credit risk mitigation techniques developed by part of the industry and the credit risk mitigation techniques eligible for regulatory purposes laid down in the Capital Requirements Directive.

37. The treatment of indirect concentration risk (single-name or other concentration risk arising from indirect exposures to the issuers of collateral or the providers of unfunded credit protection) varies widely across institutions. In general, only larger institutions measure and monitor indirect concentration risk.

Part 7. Governance and Reporting

38. There is a wide range of internal policies for reporting large exposures, depending on the type of institution and the type of exposure:

    a. Almost all institutions use ceilings or limits, which for smaller institutions tend to be identical to regulatory limits.

    b. Most respondents indicated that they have formal policies and procedures requiring committee review and/or delegated authority

approved by the Board of Directors prior to granting of loans that could breach large exposure limits – particularly single-name limits.

c. Counterparty exposures are reported to the management hierarchy on a regular basis: weekly, monthly, quarterly, or, for smaller institutions, according to regulatory requirements. The frequency can vary according to the type and level of the exposure and the speed of business. The reporting requirements tend to be accelerated in the event of breaches of internal limits.

d. Large and medium-sized institutions tend to have formal policies and procedures for monitoring and reporting large exposures and concentration risks. Limits are usually set by an executive body. Often an audit committee examines the larger counterparty exposures, country and sector exposures, and exposures that have changed significantly or defaulted.

e. Particularly at the smaller institutions, there are few formal approaches to monitoring sectoral or geographic concentrations.

f. Most respondents indicated that breaches of internal limits must be reported immediately to the responsible committee or management designated at that institution.

Part 8. Regulatory Environment

39. The survey of market practices included a section which asked for respondents' views on the current LE regime. Respondents comments included the following:

a. Most smaller respondents indicated that they feel the current regulatory regime is sufficient and a number of these expressed a certain degree of ambivalence for change.

b. There appears to be a general consensus among banking groups and larger institutions that the risk weights for the large exposures regime should be tied to the risk weights used in the capital regime and, in particular, should take into account the counterparty creditworthiness and transaction maturity.

c. Particularly at larger institutions, there appears to be a gap between the measurement, management, and reporting of concentration risks for internal purposes and the limits and reporting requirements contained in the CRD and national regulations.

d. Some respondents questioned the appropriateness of applying the LE regime to their business. These included investment management firms, energy trading firms, commodity trading firms, money market funds, and factoring companies.

e. Some of the respondents felt that the current LE regime does not adequately address the treatment of derivatives, trading book activities, investment management and fund operations, other modern financial instruments, and obligors' creditworthiness.

f. There was a general sense that intra-group exposure limits are unduly constraining, given that risk management is conducted at the group

level. A number of institutions stated that the inflexible nature of the LE limits conflicts with their internal risk standards.

g. A number of respondents expressed a general sense of a lack of harmonisation in LE rules across the European countries in which they operate. This was thought to increase administrative costs and complicate cross-border business.

40. Among the expectations put forward by market participants, were:

a. Harmonisation of how each member state treats breaches of limits,

b. Preference, at least on the part of large institutions, for integration of the LE scheme into the Pillar 2 framework for concentration risks, without the need for a detailed regulation because it would be fully integrated into the ICAAP process,

c. Should the LE regime be maintained, it ought be more risk-sensitive and more closely aligned with institutions' internal approaches.

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Part 1. Approaches to the measurement and management of single-name concentration risk

1. How is single-name concentration risk conceptualised?

1. Single-name concentration risk is generally defined as the potential for an individual exposure or a group of closely related exposures to produce losses that are large relative to an institution's capital, total assets, or earnings, or that could threaten the institution's ability to maintain core operations. In a number of institutions, single-name concentration risk is managed along side the measurement and management of 'other' concentration risk, such as sectoral and geographic (see Part 2). Accordingly, a sharp distinction is not always apparent in the management of single-name concentration risk and "other" concentration risk.

2. Examples of definitions provided by respondents include:

   - "The risk is related to the loss of a significant part of capital due to the bankruptcy or failure to pay of a single borrower or borrower group."

   - "The risk of suffering high losses in the event of default by one or more large customers."

   - "A single exposure, or a group of exposures, with the potential to generate losses that would impact very significantly bank's income (beyond market expectations). This impact can be due to exposure's size, its level of risk, and/or its correlation with the credit risk portfolio."

   - "Single-name risk can be considered to be a particular case of concentration risk and is defined as the risk that the default of a single customer or connected group of customers results in impairment in a given period that is out of line with external expectations causing a disproportionate reduction in market capitalisation or in extreme cases that is large enough to threaten the [institution's] health or ability to maintain its core operations."

3. Many institutions – particularly larger, more sophisticated ones – appear to have a dual conceptualisation of single-name concentration risk. They regard it:

   a. First, as the risk of severe loss to the institution resulting from the default of a single counterparty. This risk is addressed mainly through the imposition of limits on large exposures.

   b. And second, as the unexpected portfolio loss attributable to large exposures, measured at a given confidence interval using an economic capital or Value at Risk (VaR) model which may or may not take

undiversified idiosyncratic risk[4] into account. Institutions incorporating this second aspect into their risk management systems address it by allocating capital to cover the unexpected loss.

4. One large regional banking group expressed the view that concentration risk is not a well-defined concept, and noted that the group does not have a clear definition for internal purposes.

2. How is single-name concentration risk measured?

5. There are two distinct approaches to measuring single-name concentration risk, corresponding to the two conceptual perspectives mentioned above.

   - The first approach measures single-name concentrations in terms of the institution's total exposure to a given counterparty (and sets internal limits on their size, as described in the next section).

   - The second approach measures single-name concentrations in terms of their impact on the riskiness of the institution's overall credit portfolio, using an economic capital or VaR model to estimate the magnitude of unexpected portfolio losses at a specified confidence interval.

Limits-based approaches

6. The great majority of institutions use limits-based approaches, either alone or in combination with economic capital models.

7. Institutions generally consider all exposures to the same counterparty, both on- and off-balance sheet. Some institutions include indirect exposures (such as exposures to the issuers of collateral or the providers of unfunded credit protection) as well as direct exposures. Some include settlement and delivery risk. Some apply limits to counterparty credit exposures in the trading book.

8. Most institutions take linked or related customers into account when managing concentration risk. Accordingly, internal limits apply to single names, groups, or related parties (see discussion below on 'connected counterparties').

Economic capital approaches

9. A significant number of respondents – mostly but not exclusively larger or more sophisticated institutions – reported that, in addition to limits-based approaches, they use approaches based on economic capital. However, many respondents who indicated that they use economic capital models did not make it clear how and to what extent their models actually capture

[4] Idiosyncratic risk is risk that is uncorrelated to the overall market. In other words, it is risk that is counterparty-specific.

idiosyncratic risk. Generally, detailed descriptions of economic capital models were not received from respondents.

10. In economic capital approaches, the institution uses an economic capital or VaR model both to estimate unexpected losses at a specified confidence interval and to calculate the amount of economic capital needed to cover those unexpected losses. In this approach, risk measurement and risk management are closely intertwined. Economic capital approaches are described in more detail in the section on single-name concentration risk management, below.

3. How is single-name concentration risk managed?

11. Respondents reported two distinct approaches (mirroring the two approaches to measuring risk):

    - The first approach sets limits on the institution's total exposure to a given counterparty.

    - The second approach allocates economic capital to cover the unexpected portfolio losses estimated by the institution's economic capital or VaR model.

      Single-name concentration risk management is also discussed in Section 7 – governance and reporting.

Limits-based approaches

12. The institution monitors its credit portfolios for compliance with established internal limits, generally both when new credit is extended and on an ongoing basis. Limits may be 'hard' (the institution's policy is not to extend credit if that would breach a limit) or 'soft' (breaches must obtain the approval of senior management or a delegated review committee.)

13. The most common practice is to express these limits as a fraction of total capital (i.e., the institution's own funds). Some institutions express limits in terms of total assets. A few use limits based on the capital or assets of the counterparty, either in addition to or as alternative to limits based on the institution's own capital or assets.

14. Many institutions, particularly smaller ones, set internal limits that are identical to or derived from regulatory limits on large exposures. However, most large institutions, as well as some smaller institutions, set internal limits that differ significantly – in metric, as well as magnitude – from regulatory requirements. Many of these institutions stated that their internal concentration risk limits were more conservative than those set by national regulators.

15. Some respondents reported that they apply limits at more than one level. For example, they might set counterparty limits within a product or

instrument category, business area, currency, or counterparty rating band, combined with an overall appetite for the counterparty.

16. Some institutions use maturity as a further concentration risk management tool, setting distinct counterparty limits for different time-bands (for example, 0 to 3 months, 3 months to 1 year, 1 to 5 years, 5 to 10 years).

Factors taken into account when setting the limits

17. Creditworthiness is a key factor for many institutions in setting internal limits on total exposures to a counterparty. The maximum exposure to a corporate counterparty is related to the counterparty's rating or rating class, whether generated internally, obtained from external rating agencies, or a combination of the two.

18. The assessment of creditworthiness may be based on a combination of obligor grades, rating agency ratings, IRB parameters such as PD, EAD, LGD and EL, and other qualitative and quantitative factors. Counterparty ratings are intended to indicate the probability of default for an exposure over a defined time horizon.

19. Some respondents indicated that they take a variety of factors other than creditworthiness into account to a greater or lesser extent when setting limits. These may include the nature of the product (including, in some cases, correlations with the counterparty's operating environment), maturity/tenor, the purpose of the credit, and the sources of repayment.

20. One respondent indicated that it uses an LGD concept in setting limits. It described its approach as follows: "The creditworthiness of the counterparty is a key consideration in setting individual customer limits, which are set in absolute values." A range of qualitative and quantitative factors are taken into account, including:

    - Purpose of credit and sources of repayment
    - Customer risk profile
    - Sensitivity to market and economic developments
    - Repayment history
    - For business customers, the customer's position within a sector and the outlook for the sector
    - Proposed terms and conditions of the credit
    - Credit risk measures appropriate for the type of customer such as credit grade, Probability of Default (PD), Loss Given Default (LGD), and Expected Loss (EL)
    - Risk-adjusted return
    - Adequacy and enforceability of any risk mitigation

- The legal and reputational risks associated with the proposed facility/relationship

- Credit risk mitigation (see Section 6)

21. Another respondent stated that it defines exposure to a given counterparty as the sum of direct exposure, indirect exposure, and settlement and delivery risk. Single-name concentration risk is measured at client group level by the Senior Unsecured Equivalent Exposure (SUE), which consists of translating all exposures to a client group to their senior unsecured equivalents based on Loss Given Default characteristics. Since 2003, general management has set a warning concentration grid, in the form of a SUE euro-denominated threshold grid, per obligor rating and maturity. This grid captures all the elements of an economic capital model except correlation, and expresses the bank's credit appetite (or maximum acceptable losses amount) for a given borrower at all points on the grid. Name concentration is measured based on credit authorisations and commitments. When a name limit is established, it is defined in commitments based on 'SUE' equivalent and average maturity of transactions.

22. Another respondent indicated that it uses an approach based on limits that depend on the creditworthiness of the counterparty, with consumptions in real time and daily controls. The guarantees are an important factor in both the operation and the authorization of limits. The respondent does not operate with companies below investment grade. It is developing a new limit structure based on limits in terms of capital as a function of the creditworthiness of the counterparty.

23. Many respondents provided only a general description of the approach they have adopted, which did not permit CEBS to obtain a clear view of precisely what factors are considered, how they interact to produce an internal limit, or what the relative sizes of those limits are – other than that in many cases they were stated to be more stringent than the national regulatory limits.

24. Some examples of specific definitions of large exposures for internal purposes included:

- Large exposure = 5 percent of capital
- Limit of large exposure = 20 percent of capital
- Limit for all designated large exposures = 4 times own funds

25. In another country, limits at an institution are applied as follows

- Limit of large exposure = 12.5 percent of net own funds (NOF)
- Total exposures exceeding ten percent of NOF not to exceed 150 percent of NOF.

26. Another country reported a variety of approaches in different institutions. One institution has internal limits, expressed in terms of capital, which are stricter than the regulatory limits:

- Definition of large exposure: 5 percent
- Limit of each individual exposure: 20 percent
- Limit for aggregate large exposures: four times own funds.

27. Another institution monitors single-name concentration risk for exposures exceeding two percent of capital. At yet another bank in the same country, exposures over €30 million (which represents less than one percent of own funds) are monitored.

28. As mentioned above, although limits are often expressed in terms of capital, some banks in member countries limit exposure in terms of assets. Examples of such limits include:

- One percent of total assets for exposures to public corporations
- 0.5 percent of total assets for exposures to private counterparties

Limits and procedures for exceeding limits

29. It was not always clear from the responses what the nature of the limits was ('hard' versus 'soft'), or what the procedures were for approving exposures that exceeded the limits. Some respondents described their limits as 'absolute.' However, the internal limits at most institutions appear to be 'soft' – in the sense that they may be exceeded subject to compliance with certain procedures or approval processes – while regulatory limits are regarded as 'hard.'

30. In general, respondents have adopted a 'multi-level' approach to setting and applying limits, reviewing and monitoring limits, approving excesses over the limits, and reporting single-name risk concentrations.

31. Most respondents have processes for determining and reviewing when a limit may be exceeded. Some respondents indicated that the limits may be exceeded up to a certain level subject to designated approval or review processes. Other exemptions might need to be cleared at a global head level.

Small and medium-sized institutions

32. As noted above, many small banks base their approach to single-name concentration risk on regulatory limits, or on something derived from regulatory limits. However, this picture is by no means uniform.

33. One national association of small cooperative banks indicated that many of its members focus on the fulfilment of regulatory requirements.

34. In another country, one institution indicated that its limits in terms of capital are the same as regulatory limits, but that it also has limits expressed in terms of assets. Those limits were one percent of total assets

for public corporations and guaranteed credits, and 0.5 percent for private counterparties without guarantees. Another institution indicated that its internal limits for certain segments or clients were stricter than the regulatory limits. Another institution stated that it had no internal limits apart from those established by regulation.

35. In another country (with a mixture of small and medium-sized institutions), "most of the institutions advised that their approaches are aligned with regulatory approaches. Most respondents advised that their own internal concentration limits are set below regulatory limits…"

36. Another country with institutions of mixed sizes reported that "in general terms, for internal purposes, institutions have adopted an approach to concentration risk measurement and management which is closely linked to the limits established in the current national regulatory regime."

37. As mentioned above, some small or medium-sized institutions – particularly those that are members of associations providing or supporting such risk measurement tools – indicated that they have adopted VAR-based measurement or management methodologies.

38. It should be noted that some countries impose additional LE limits in national regulations. For example, in one country single-name LE should not exceed de minimis level of at least Euro 500,000.

39. It is probably fair to conclude that there is a spectrum of approaches running from a simple focus on the regulatory requirements, through modifications (tightening) of the regulatory limits for internal purposes (including monitoring, reporting, excess approval, etc.), to more distinct limits-based approaches.

Economic capital approaches

40. As indicated above, a significant number of institutions use economic capital models to manage their exposure to idiosyncratic risk. Some respondents reported that they use tools such as CreditMetrics to measure and manage concentration risk. Others indicated more generally that they use VaR models. Different institutions use various confidence levels in their calculations.

41. VaR models estimate unexpected credit losses and the economic capital needed to cover them at a specified confidence level. The inputs to the model include counterparty default and transition probabilities implied by the institution's internal credit ratings, and the estimated loss given default. Some examples of the descriptions that respondents provided of their models include the following:

    - Single-name concentration is considered in simulating the default/no default event. The number of defaults occurring for each cluster is simulated (from a Bernoulli distribution) on the basis of a parameter that is computed using a 'diversity score' approach to take into account intra-cluster concentration: the total number of exposures in

the cluster is set at the reciprocal of the Herfindahl-Hirschman concentration index, which takes into account the actual exposure of the bank towards the various counterparties. Perfect diversification corresponds to the infinite granularity hypothesis: in the model framework, this can be obtained by simulating the Expected Loss distribution instead of the Actual Loss distribution.

- Single-name concentration risk is measured by calculating a concentration ratio which captures the negative effect on Capital at Risk (CAR) of the different distribution of an ideal, infinitesimally granular portfolio, compared with the actual portfolio of the bank. Capital is allocated among sub-portfolios to take into account the effect of concentration, particularly for significant exposures to the largest groups of borrowers.

- The concentration ratio is calculated only on a consolidated basis and not for every single counterparty, and takes into account the risk of contagion from one counterparty to another in the same group. The concentration ratio is calculated as the difference between the Component CAR and the Granular CAR of every sub-portfolio divided by the Granular CAR of the whole portfolio (it is equal to the sum of all Granular CAR of every sub-portfolio). The ratio is equal to zero if there is a total absence of concentration (infinite granularity hypothesis).

- The institution performs economic capital calculations on a regular basis to ensure it has sufficient capital to absorb unexpected losses for the entire portfolio at the 99.97 percent confidence interval (equivalent to an external rating of AA) The economic capital calculation uses Monte Carlo simulations and takes into account risk drivers (PD, LGD, Maturity). This is one example where it was not clear whether or how idiosyncratic risk is captured in the economic capital calculation.

- The approach is based on a combination of exposure amounts and economic capital amounts. Creditworthiness of the counterparty is embedded in its internal counterparty credit ratings, which is one of the inputs to economic capital calculations. Soft limits (authorisations) are defined in notional amount, at the counterparty legal entity and group levels alike. These limits are set by a credit committee. Concentration risk management is based on a coherent set of indicators, of which economic capital is the most important. Its quantification is based on Monte Carlo simulations taking into account full portfolio effects. This is another example where it was not made clear whether or how idiosyncratic risk is captured in the economic capital calculation.

42. While the majority of smaller institutions have not adopted more sophisticated risk measurement approaches, some – particularly those that are members of associations providing or supporting such risk measurement tools – appear to have adopted VAR-based measurement or management methodologies.

Reporting (see section on governance and reporting, below)

43. In addition to reporting single-name concentration risk and large exposures to regulators, institutions generally have internal reporting policies and procedures designed to ensure that the institution does not assume excessive concentration risk. The nature, frequency, and extent of this internal checking and monitoring vary from one institution to the next.

Stress tests

44. Stress testing of single-name concentration risk is conducted at a number of institutions throughout the EU – predominantly large or medium-sized institutions, often in only some markets, and even there not in all cases.

45. One country indicated that stress testing techniques are used only by the largest banks, and not according to a regular testing program. Stress tests are usually performed whenever events or situations occur that could have a negative impact in term of losses to the bank.

46. Another country indicated that the extent and nature of stress testing of single-name concentration risk appears to vary among respondents.

47. A significant number of institutions appear not to be conducting any form of stress testing at present. Some respondents reported that stress testing in their markets is still in the development stage. One respondent indicated that while it does not currently stress-test single-name concentration risk, it is undertaking work to introducing the stress testing required in connection with the implementation of the CRD. A few respondents expressed the opinion that the use of economic capital or VaR approaches in itself amounts to a form of stress analysis. One respondent expressed the view that large exposure limits in themselves represent a 'stress concept.'

48. It was difficult for CEBS to form a clear picture of stress-testing practices, since most respondents that stated they used stress tests did not provide any details on the approach that they use. The descriptions provided by the few respondents that did provide details should therefore probably be regarded as anecdotal.

49. One bank reported that it stress tests a ten percent decline in the value of collateral, a loss of the ten largest exposures, a loss of the unsecured portion of the ten largest exposures, and a loss on loans in the 'potentially vulnerable to default' category. Another institution conducts a quarterly risk-analysis calculation of its loss-bearing capacity, in which the targeted seven percent Tier 1 level is challenged. Another conducts stress tests based on the deterioration by one rating class of the entire corporate portfolio.

50. One respondent indicated that it conducts routine stress tests "as part of the suite of stress testing procedures, our monitoring of 95th and higher percentile exposures and our 'economic capital model'" and through the efforts of a scenario analysis team which has responsibility for identifying potential risks and scenarios for further analysis at single-name and portfolio levels. Another indicated that it continually monitors 'jumbo' clients

both for marketing opportunities and for risk, using "simple ad hoc 'what if' tests [as] one of the various methods used to that end," and also conducts group-wide annual stress tests incorporating large name risks. Another respondent indicated that it runs scenario exposure reports on a monthly basis, highlighting the top 25 investment grade and non-investment grade exposures in each region based on a defined set of scenarios. Other respondents appear to conduct limited stress-testing of single-name exposures.

Specificities of the measurement of concentration risks in some other categories of institutions

Investment management firms and small private-client investment managers/stock-brokers

51. Investment managers and private client investment managers/stock-brokers responding to the survey noted that they do not engage in activities that present significant credit risk, or that their credit risk is limited to one particular type, such as settlement risk. They use relatively simple aggregation methodologies to ensure that they do not breach regulatory limits. One respondent (a private-client firm) indicated that it holds sufficient regulatory capital for large exposures not to become an issue; it considers this to be an adequate approach to managing its settlement risk. This respondent indicated that, for it, the management of single-name concentration risk flows automatically from good day-to-day management of all settlement risk, regardless of its distribution among counterparties.

52. An investment management association noted that credit risk is not considered to be a business risk of any significance to its members. It noted that those 'concentration' aspects that are of significance to a particular institution – such as fees owing, the concentration of assets under management, or the concentration of clients in a particular market, sector, or geographical region – are carefully monitored. It suggested that even smaller investment management firms regularly undertake 'what if' exercises on the value of assets under management, to see how the business would perform under different assumptions. Their approach to credit risk concentration limits is driven (unduly, they argue) by regulatory requirements. Responses from individual asset management companies supported this view. Exposures to a concentrated number of clients or markets are considered to be a strategic risk. According to one respondent, "the most effective way to assess and manage this risk is to determine the impact of adverse scenarios on the business…" One small investment firm reported that the nature of the services it provides (investment advice, portfolio management) makes it well acquainted with the financial circumstances of its clients. This firm does not anticipate any defaults as a result of poor creditworthiness, but rather as a result of the risk that clients may not be willing to pay agreed fees.

Energy commodities traders and other small trading firms

53. An association of energy commodities traders reported that its members usually calculate exposures daily, on the basis of settlement, for all physical and financial derivatives (forwards, futures, and options) on the commodity 'electricity.' This calculation covers aggregate mark-to-market exposure (usually future exposure, and sometimes also potential future exposure), claims after delivery, and additional factors which capture future market developments. Single-name concentration risk and counterparty limits are adjusted daily. Counterparty limits are based on internal and external credit ratings, collateral, and trade volume. Stress testing is not commonly used in managing concentration risk. Only a few association members evaluate future risks, usually using Monte Carlo simulation (best practice). There is generally no specific internal risk measurement. Most of the association members manage concentration risks indirectly in their calculation of counterparty limits. Some firms – for example, companies which provide only physical energy services – do not have any internal risk management. On the whole, risk measurement methodologies for securities financing transactions are not of great concern to the members of the association.

54. One small trading bank (a commodities trader), which is no longer subject to prudential supervision, has adopted an approach to measuring and managing concentration risks which is not linked to the current national regulatory regime but which meets internal risk management strategies. It has implemented a system of absolute limits on company and group-level exposures. Limits are based on internal and external ratings and the size of the counterparty (not on trade volume). If a limit is breached, a collateral call follows immediately and must be paid within one day. The trading bank calculates for each counterparty the CEE (credit exposure equivalent), PFE (potential future exposure), and a close-out scenario, using proper calculated volatilities. It defines single-name concentration risk as the risk associated with little or no diversification in the portfolio. However, the limits are related to individual counterparties. In addition, it calculates CVAR with a holding period of one year and a confidence level of 95 percent for the exposure and 99 percent for the default. The amount at risk is defined as 'exposure minus collateral.' It is calculated daily on a settlement basis by aggregating mark-to-market exposures (current exposure) and claims after delivery. For products whose future exposures may fluctuate, the trading bank calculates CVAR with a holding period of one year and a confidence level of 95 percent for the exposure and 99 percent for the default respectively a Pre-Settlement Exposure (PSE) which is equivalent to a CEE (Credit Equivalent Exposure) respectively a PFE (Potential Future Exposure).

Factoring companies

55. One response was received from a large internationally active factoring agency. This company evaluates counterparty risk both at the level of the clients and at the level of the debtors (the clients of the factoring company's clients).

56. The risk derives from losses exceeding the financing structure of the company, after taking into consideration any guarantees received from

credit insurance or other external counterparties. It also includes the financial impact on profit and losses.

57. Client risk is addressed, with the risk being mitigated by the type of contract: a non-recourse contract will focus more on debtor risk while a recourse contract will focus on both the debtor and the client.

58. In factoring, special emphasis is placed on the relationship between the client and the debtor. If the client relies on a single debtor, the risk of fraud increases.

59. Since factoring is a short-term activity (less than 90 days), the company does not use stress scenarios based on economic cycles. No models are used; each exposure to a counterparty is treated on a case-by-case basis.

Part 2. Approaches to the measurement and management of 'other' (sectoral, geographic) concentration risk.

1. How is 'other concentration risk' conceptualised?

60. In general, 'other concentration risk' is understood to refer to the risk arising from a group of exposures that share the same underlying risk factors (exposures in the same sector, same geographical region, etc.). A deterioration in the common risk factors could influence the ability of all of the various counterparties to service their debt, resulting in large aggregate losses that threaten the solvency of the institution.

61. However, there are subtle differences in meaning, as well as significant differences in wording, from one institution to the next. For example,

- Some institutions specified that the impact must be ¨significant¨ in order for the group of exposures to be considered a concentration risk, while others specify that it must affect the institution's stability.

- A few institutions stressed the possibility of suffering ¨unexpected¨ losses. They pointed out the importance of the unexpected nature of this risk, and indicated that they would accept a greater concentration in groups or sectors considered strategic for the institution.

- Others institutions stated that they understand concentration to mean the opposite of diversification: i.e., holding a significant proportion of risk in a reduced number of clients, sectors, geographical areas, etc. Concentration is independent of the quality of the portfolio, and implies a higher level of risk than a more diversified portfolio (with the default risk of the individual counterparties held constant).

62. Some examples of the wording used by different institutions to describe this concept are:

- "The risk coming from the accumulation of risk in financial instruments with similar characteristics and that can be affected in a similar way for economic changes, legal changes or other type and that can compromise the own funds of the institution. Single-name concentration or other type of concentration increases the impact of a default, and therefore increase the risk of losses."

- "The risk of the loss of a significant part of capital as a result of sequential bankruptcies or failure to pay of clients in the same industry or geography over a period of time in response to cyclical industry factors, or country risk events"

- "The risk that the proportion and correlation of assets in a particular industry/sector, product, or geography leads to impairment in a given period that is out of line with external expectations leading to a disproportionate reduction in market capitalisation or in extreme cases that is large enough to threaten the institution's health or ability to maintain its core operations."

63. Other concentration risk usually focuses on sectoral and geographical dimensions, but some institutions include other factors in their definitions, such as the type of product, residual maturity, the type of guarantee, credit rating, political risk, legal risk, business lines, and financial and economic position of the counterparties. Sometimes the level of concentration of clients' deposits and interbank funding are also included. But, as noted in Part 1, paragraph 1, a number of institutions manage single-name concentration risk alongside the measurement and management of 'other' concentration risk and so there will not always be a distinction between their management and control.

2. How is 'other concentration risk' measured?

64. The survey revealed a dichotomy in the methods used to measure other concentration risks. Larger institutions typically use mathematical models, while smaller institutions consider a combination of the magnitude of the exposures relative to the bank's capital and the level of risk of the sector or country in which the exposures are concentrated. In the context of credit risk measurement the results of the stress test serve as well to identify other concentration risks.

65. Creditworthiness is an important factor for all respondents. Credit ratings influence the internal limits set by the institutions, and thus the creditworthiness of the counterparty determines the bank's tolerance to that exposure.

66. Institutions use their own estimates of creditworthiness in the retail portfolio, while in the wholesale (corporate) portfolio they rely on external credit ratings for the sector or geographical area. External ratings can be used as inputs to models, to set internal limits on concentrations, or as flags to perform more intensive monitoring.

More sophisticated institutions

67. The more sophisticated institutions use methodologies based on internal economic capital models. The methodologies used for sectoral and geographical concentration risk are generally similar to those used for single-name concentration risk, but the focus is on correlations: intra-sector, across sectors, and across geographical regions. The models can be used to develop scenario analysis or stress tests. Some institutions stressed the comprehensive character of their approach to concentration risk in contrast with the parcel approach in the regulation. Some institutions perform VaR calculations on all their portfolios, including both credit and market risk.

68. One institution indicated that it uses full simulation economic capital as the key reference measure for detecting concentrations. This approach captures the combined effect of exposures, risk profiles, and correlations. The resulting economic capital measures are then combined with absolute exposure amounts.

69. The factors included in the modelling include rating or grade profile, trends in profile, maturity band, potential loss, and sector risk, including PD, EL, LGD and economic capital. Other factors include existing relationships, risk-adjusted returns on transactions, the degree of correlation within the sector, and the percentage of Tier 1 Capital represented by the sector.

70. The parameters of these models are estimated through quantitative (historical data) and qualitative (expert opinion) analysis.

71. Many institutions use multifactor internal economic capital models. In most cases, most of the factors are observable, and correlations are estimated from historical series and then corrected by 'experts,' with a conservative bias if the results are not in line with the experts' expectations. In the rest of the cases, the correlations are defined by experts.

72. The historical series used in estimation include macroeconomic variables such as Gross Domestic Product and interest rates, and market variables such as stock prices and market indices.

73. The loss distribution function is calculated using Monte Carlo simulation of the risk factors, and economic capital is defined as a percentile of that distribution.

74. In some countries, a number of institutions have been advised by the same external consultancy in the development of their methodology. Other institutions have developed their economic models internally. One large institution stated that no vendor's model fits its particular needs.

75. Some banks stressed that caution is needed in interpreting the results produced by these methodologies, because correlations are usually estimated through proxy variables, and sectors or areas are aggregated according to arbitrary criteria, so that results are subject to 'model risk' or model dependencies. Even if correctly estimated, correlations can be subject to structural breaks as a consequence of economic stress situations,

thus producing losses that are potentially higher than ex-ante estimated concentration risk. Some banks manage this situation through stress-test analysis, including correlation stressing.

Small and medium-sized institutions

76. Small and medium-sized institutions generally do not use mathematical portfolio models or internal economic capital models to monitor and manage 'other' risk concentrations.

77. Some countries made a distinction between local parent institutions and local subsidiaries of EU parent institutions. Where the EU parent institution uses mathematical portfolio models or internal economic capital models, its local subsidiaries generally use them too. These countries also noted that the use of portfolio models by EU parent institutions is likely to become more prevalent following implementation of IRB approach, because the credit risk components (PD, LGD, and EAD) that must be quantified for the IRB model are the same parameters used in portfolio models. Small local parent institutions intend to use pooled data to overcome shortcomings in their internal datasets.

78. In measuring other concentration risk, these institutions take into account a combination of the size of the respective exposure relative to the institution capital and the level of risk of the sector or a country. The measured level of risk can be the result of internal analysis or it can be obtained from external sources, such as ratings assigned by international rating agencies.

79. One institution reported that it uses different methods to calculate sector concentration risk for retail as opposed to wholesale activity. For retail activity, concentration risk is distinguished by the legal nature of the counterparty, the activity sectors are broader, and the sectors follow the classification established in regulation or law. Concentration risk is calculated as the counterparty risk, without taking personal guarantees or collateral into account. In contrast, for wholesale activity, sector definitions from Bloomberg are used. Geographical concentrations are also obtained differently for the retail as opposed to the wholesale portfolio. In the retail portfolio, exposures are grouped by province or area, and concentrations do not take personal guarantees or shares into account. In the wholesale portfolio, exposures are grouped by country.

3. How is 'other concentration risk' managed?

80. In general, all institutions take 'other' risk concentrations into account in one way or another. There is a broad range of approaches to the measurement and management of this risk, ranging from the least sophisticated, which consists entirely of some form of monitoring, to the most sophisticated, which bases the management of these risks on economic capital models.

81. Some institutions explained that other concentration risks are sometimes managed using internal limits defined in terms of capital or assets. The main differences across institutions that declare the use of limits are: First,

in how these limits are derived: from a model, or using a more *ad hoc* approach, and second, on relation to the nature of the limits: hard or soft limits and the corresponding escalation process (e.g.: in some cases, triggers are used to initiate a review of credit risk appetite).

82. In general large banks declared that the management of these risks relies more on a close monitoring, regular reporting and a dynamic management based on strategic patterns. Some of the forms of management mentioned by respondents included dynamic credit policy formation, pricing hurdles, capital allocation, and general portfolio diversification. Techniques such as sell-down strategies and scenario planning are also used by several institutions.

83. The activity of an institution is an important determinant of its strategy in defining its policy concerning these risks. For example, one institution may deem it appropriate to set internal limits for sector risk but not for country risk, while another institution may do the opposite, depending on their respective profiles. For instance, institutions that are locally-based tend not to have a policy regarding geographical concentration, because they do not conduct international business. Even within an institution the policy largely depend on the specific circumstances in each moment, given the dynamic nature of the risk management.

84. Large institutions pointed out that sector or geographical concentration does not necessarily imply a riskier approach given that institutions usually concentrate in which they have more expertise. Increasing diversification by entering in new sectors and markets without the necessary expertise could be a riskier approach than the former.

More sophisticated institutions

85. The largest institutions use advanced methodologies (portfolio models, concentration risk indicators, stress testing, and scenario analysis) to calculate the capital absorbed for risk management purposes and to set limits on the maximum exposure to each sector or geographical region.

86. The measures of expected and unexpected loss, economic capital, and risk-adjusted profit and loss generated by these methodologies are also used in the credit granting decision process.

87. In addition, the results of these methodologies are used to develop credit policy strategies and to provide detailed reports to the management body to support effective management of credit risk.

88. Institutions sometimes do not include the largest exposures in the assessment of sectoral and geographical concentrations because these exposures are managed and monitored separately.

89. Sophisticated institutions reported that they have well-developed systems for reviewing, monitoring, and controlling all internal procedures, including economic capital models.

90. As an example, one large bank described its approach as follows:

- It considers its risk appetite from two perspectives – financial volatility (the level of losses it is prepared to sustain at relevant parts of the risk profile); and 'mandate and scale' (additional limits and triggers to ensure that concentrations do not give rise to undue losses).

- Limits are then set, capping exposure by industry (e.g. property), sector (e.g. private finance), product type (e.g. mezzanine finance), and geographical region.

- Limit parameters are defined in terms of definitions (for example, exposure to all counterparties in a particular industry sector classification), the limit (exposure at default, economic capital, total limits), and the allocation of limits across business units and territories.

- A variety of factors are considered in setting limits, including overall economic outlook, group strategic constraints on risk appetite, current and forecast exposure, market growth rates, risk/return considerations, the nature of the risk (volatility, term, etc), modelling capability, expertise, external perceptions, etc.

- The institution performs stress tests for issues of particular concern, either in response to requests from senior management or as part of an annual group-wide process. A recent example is an analysis of the impact of high oil prices on the U.S. automotive sector. Stress events are selected on the basis of their potential impact on the institution's portfolio.

- The institution also conducts sector deterioration analysis, which feeds into 'add-ons' to one-year forward-looking expected average losses across the loan book. The institution also measures country transfer risk as a function of aggregate exposure limits, a 'country severity' factor, and a mitigation factor.

Small and medium-sized institutions

91. Small and medium-sized institutions reported a mix of tools and approaches to addressing other concentration risk, including limits, distribution charts by sectors, reporting and management response, judgemental considerations around high-risk areas, and scenario analyses and stress testing.

92. Portfolio effects are sometimes taken into account in the process of approving new loans and other products. One such approach is to assess the impact of new loans on the structure of the institution's overall portfolio, by sector, country, type of product, and other relevant aspects.

93. As with single-name concentration risk, many institutions use a limits-based approach. Limits are defined either as an absolute amount or as a percentage of equity capital, and may be set higher or lower as a function of the creditworthiness of the sectors or geographical areas.

94. Even the smallest institutions, which do not set explicit internal limits, usually perform some kind of analysis, and regularly monitor the evolution of exposures to sectors and geographical regions that represent a large proportion of their portfolio.

95. Some institutions do not set any limits on sectoral or geographical concentrations, but instead manage these risks through a 'severe acceptance policy.' The acceptance policy sets strict standards for risk factors that the institution considers to be important elements of sectoral or geographical concentration risk. Although no limits are applied and thus no 'corrective' measures are taken, frequent monitoring and internal reporting takes place (for example, comparing actual exposures with forecast exposures).

96. Some institutions conduct analysis in the sectors in which the institution's activity is most heavily concentrated (e.g., real estate). For example, some institutions specialising in mortgage credit recognise the concentration risk in collateral held in the form of residential or commercial real estate. They monitor trends in the real estate industry continuously in order to have an up-to-date picture of the quality and value of the collateral held.

97. Other institutions have specific policies for specific sectors or geographical areas.

98. The smallest institutions tend by their nature to be heavily concentrated on a sectoral and geographical basis. Furthermore, the management of sectoral concentrations is sometimes hampered by the small size of the country.

99. A significant proportion of local and regional institutions do not have a clear strategy aiming at diversification by sector or geographical region.

Investment management firms

100. Investment management firms stated that they do not consider concentration risk to be a business risk of any significance to them. They noted that those 'concentration' aspects that are of significance to a particular institution – such as fees owing, concentration of assets under management, or clients in a particular market, sector, or geography – are carefully monitored. Even smaller investment management firms regularly undertake 'what if' exercises on the value of assets under management to determine how the business would perform under different assumptions.

101. One large trading firm dealing on its own account (i.e. able to engage its own balance sheet items) indicated that it has a variety of tools and procedures to identify aggregate exposures, using criteria such as product type, industry, region, and country. Exposures are measured against these criteria routinely and are reported weekly, monthly, or quarterly to senior management. The firm maintains a country status list which determines how much business can be done in each market, and Sovereign limits which are reviewed monthly. The firm conducts a weekly review of new exposure-generating trades in emerging markets. There is also a High-Risk Country

List, and all business in these countries must be approved. When a risk concentration is identified (depending on the nature of the risk, the vulnerability of the sector, and the amount of the exposure), management must be notified, and further analysis may be required. Industry concentrations are reported based on pre-determined limits.

4. The measurement and management of sector risk

102. One of the first steps in managing 'other' concentration risk – regardless of the sophistication of the measurement tools used – is the definition of the relevant sectors and geographical regions. Institutions that apply economic capital models generally use their own definition of sectors, while less sophisticated institutions usually use the official national statistical classification or some other external standard classification (such as Bloomberg).

103. Most institutions reported that they set sectoral limits. Those that do not, generally conduct regular monitoring to ensure that no unduly risky concentrations arise. In sectors to which limits are applied, other rules may also be established to monitor credits, such as diversification rules, average rating, etc.

104. Institutions generally carry out sector reviews which assess the risk drivers of the sector, such as economic outlook. Institutions perform regular economic studies and set sectoral limits based on these studies, on historical experience with the sector, and on the business prospects and type of clientele.

105. In particular, the value of the limit for a specific sector depends on the ratings of the companies that are already clients within that sector, the institution's current aggregate exposure to the sector, and anticipated developments in the sector. This information is obtained from data provided by sectoral associations and from news reports related to the sector. A specific client is often analysed in comparison to the evolution of its sector or sub-sector.

106. Some respondents mentioned that, while they do not have formal sector limits, they monitor exposures to the different sectors on a regular basis. Special attention is paid to sectors identified as 'sensitive,' taking into account the general economic situation in the sector and the risk of correlation between companies in the sector. The definition of sensitive sectors may change over time depending on decisions taken by the group or by the local management or at the request of the local regulator.

5. The measurement and management of geographical risk

107. Some of the largest institutions analyse geographical concentration by country and international zone, while small and medium-sized institutions focus on regions or provinces. A number of smaller institutions reported

that they do have not the same ability as larger institutions to diversify their portfolios, because of their size.

108. Most institutions assign country limits or country grades based on fundamental analysis and geopolitical and macroeconomic factors. Limits are reviewed regularly.

109. In general, country limits are a function of the rating of the country, its size, and the institution's needs.

110. More specifically, when setting limits to foreign countries, many different factors are taken into account, such as the size and the level of economic development in each country, credit ratings issued by major international rating agencies, recent developments, the forecasts of international institutions (e.g. IMF, OECD, and the European Commission), and the institution's total exposure to the region. The capacity of a country to deal with an eventual debt default, whether sovereign or commercial, is usually taken into account, recognising that the State/Central Bank may assume the private sector's debts in certain cases. That capacity depends mainly on the amount of country reserves, interest rates, the exchange rate, and other economic indicators.

111. To mitigate exposures to country risk, many exposures to high-risk countries are insured with national export agencies.

112. Some institutions that are active in the international market have developed strategies for entering new markets and established quantitative limits to manage country risk. These are monitored regularly. Placements in other countries are strictly controlled in accordance with risk policies.

113. Institutions specialising in mortgage lending take geographical concentrations into account at the national level. A few institutions reported that they produce credit reports that include an analysis of the breakdown of the credit portfolio by regional and sectoral categories.

114. In some countries, geographic concentration is considered to be of no significance because of the small size of these countries.

6. Stress tests

115. The most sophisticated institutions conduct stress tests of 'other' concentration risk using economic capital models. Less sophisticated institutions also take different scenarios into account in their analysis, but using simpler methods. Some institutions pointed out that stress test is a tool adopted to help manage a whole broad spectrum of risks, and is not always used for a specific risk such concentration risk.

116. Only the largest institutions have incorporated stress testing into their regular analysis of sector concentration. At these institutions, stress-testing is an increasingly important part of the process of identifying and managing sector concentration risk. Stress scenarios are defined for each sector, and

the sensitivity of the portfolio to these scenarios is measured in terms of the degradation in the rating of the counterparties.

117. Stress-testing at these institutions generally looks at potential loss over a one-year time horizon based on reasonably plausible events (i.e., not tail events). A variety of scenarios are used. Parameters that are stressed can include foreign exchange rates, interest rates, equity prices, and credit spreads. Specific emerging market crisis scenarios are used to assess concentration risk in emerging markets, generating scenario exposure limits at the country and regional level. These stress tests take into account inter-sector correlations. Other scenarios assess the impact of macroeconomic recessions on the group's portfolio. Scenario exposure reports are run on a regular basis, highlighting the top investment-grade and non-investment-grade exposures in each region based on a defined set of scenarios.

118. Smaller institutions tend to conduct stress testing of industry sectors on an *ad hoc* rather than a regular basis (for example, how would an avian flu epidemic affect the institution's credit portfolio in the agricultural sector?).

119. Some small institutions reported pilot programs for monitoring changes in required capital or provisions according to stress test results. If the required increase in capital or provisions is not considered acceptable by senior management, the institution must either reduce its exposure to the sectors or geographical regions concerned, or the collateral for those exposures must be increased.

120. One investment institution reported that it conducts selective stress-testing on portfolios deemed to offer particular risk ('of gapping'). Particular country portfolios, selected on a risk basis, are stress-tested weekly. Testing focuses on specific portfolios, such as FX bond spreads/prices and equity indices. Stress testing of mortgage and loan portfolios is also undertaken. Additional stress-testing procedures are being developed.

Part 3. Exposure calculations: includes (for trading book and non-trading book) off-balance-sheet items, derivative exposures, security finance transactions, structured transactions, intra-day and settlement exposures, and 'look-through' approaches

121. Nearly all institutions define exposures in conformity with the large exposure provisions of EU banking directives (Article 106 of Directive 2006/48/EC and Annex I of Directive 2006/49/EC): i.e., as on and off-balance sheet items (banking book) and settlement and delivery risk (trading book).

122. However, institutions have different approaches to calculating the value of exposures:

123. Some institutions – particularly smaller ones – use a regulatory approach that is completely consistent with the large exposure provisions of the Directives. They use book value for on balance-sheet items and nominal value for off balance-sheet items. For traded off-balance-sheet items, the value is determined by applying one of the methods mentioned in Annex III of Directive 2006/48/EC. Exposures in the trading book are calculated in accordance with Annex I of Directive 2006/49/EC.

124. However, many respondents – mostly large and medium-sized institutions – use more sophisticated approaches based on internal VaR models.

125. Most of these respondents reported that the amount at risk is the exposure at default (EAD).

126. One large respondent uses a matrix of weighting factors for each type of risk. The matrix is based on an internal statistical survey and a mathematical model. Exposure is calculated using EAD for 'classic' credit risks and expected positive exposure (or adequate approximations) for other risks.

127. Another institution defines EAD as the sum of utilised exposure and the portion of the unutilised exposure that is expected to be utilised in the event of default. The latter is calculated using loan equivalent factors (LEF).

128. One respondent applies the conversion factors specified in the Basel II Accord issued in June 2004.

129. Another institution calculates the amount at risk as the estimated loss in event of default of the counterparty (debtor or issuer). The amount at risk within its group is commonly measured as a percentage of the initial notional exposure.

130. According to an association of energy commodities traders, the calculation of exposures usually covers claims after delivery and future exposure, and sometimes covers potential future exposure as well.

131. Some institutions consider the exposure amount of funded and unfunded facilities (e.g. loans, revolving current accounts, and guarantees) to be the commitment (e.g. approved limit) or the outstanding amount, whichever is the higher, taking into account the value of recognised credit risk mitigants account.

132. Some respondents indicated imminent changes in their exposure calculation methods in the context of CRD implementation.

1. On-balance-sheet items

133. Only a few respondents described how they calculate the value of on-balance-sheet exposures.

134. Most of the respondents that provided information on this point use the balance-sheet value. Some use exposure net of value adjustments. Two institutions reported that they use the nominal value of the exposure.

135. One large bank reported that it scales bond transactions according to their maturity, and applies risk factors to the exposure based on the maturity of the instrument.

136. Another respondent stated that it uses current outstanding debt for residential mortgage lending.

2. Off-balance-sheet items

137. Again, only a few respondents described how they calculate the value of off-balance-sheet exposures.

138. Some of these institutions apply the nominal amount of claims, without applying conversion factors.

139. In one country, most large banks transform undrawn lines and other off-balance sheet items into cash equivalent exposures through a system of internally estimated credit conversion factors.

140. One large bank uses 50 percent of the undrawn facility.

141. Some institutions measure the exposure of guarantees as the face value of the guarantee, or less if there is a permanent diminution of the underlying obligation.

142. One country reported that off balance-sheet items are accounted at the potential loss in case of contingent assets.

143. Respondents that have signed an ISDA Credit Support Annex with a counterparty – a class of institution that generally includes only well rated, highly sophisticated banks – derive the credit risk associated with off-balance-sheet exposures from a netting transaction based on a mark-to-market valuation.

3. Derivatives

144. Although there are some commonalities – for example, the calculation of future exposures using sophisticated internal models by most large and medium-sized institutions – the calculation of derivatives exposures appears to vary throughout the EU.

145. Nevertheless some respondents use the mark-to-market approach according to Annex III of Directive 2006/48/EC for calculating derivatives.

146. In principle, some large banks use the regulatory mark-to market approach. However in some specific cases (more complex or exotic products) these

banks also use an internal methodology (e.g., Peak Potential Future Exposures with a 95 percent confidence interval).

147. One large bank reported that it arrives at the exposure value of derivatives by discounting the nominal value of the contract by a percentage ranging from 10 percent to 20 percent according to the type of contract.

148. One country reported that derivatives are considered either on a mark-to-market plus add-on basis, or at nominal value.

149. Some institutions calculate the exposure value of derivatives using a so-called Expected Positive Exposure (EPE) method. Some use a more conservative loan-equivalent exposure method for measuring future exposures; this method is considered conceptually the same as EPE. There are also institutions that adjust EPE upwards to take into account counterparty credit quality and/or concentration risk.

150. Other institutions measure replacement risks on derivatives using a credit VaR model and a confidence interval. One country reported that replacement risks for derivatives are measured as credit VaR and current average risk.

151. Many respondents adopt a simulation/modelling approach to arrive at a Potential Future Exposure (PFE)/mark-to-market through time value. Different confidence intervals are used, often with more than one interval being calculated. Another respondent indicated that it uses current mark-to-market and potential future exposure (PFE).

152. One large institution reported that for wholesale the exposure is calculated with the following formula: the sum of market value or zero (whichever is greater) plus potential future exposure, multiplied by the risk weight of the counterparty. There is no netting with additional guarantees, collateral, credit derivatives, etc.

153. One respondent indicated that the group estimates exposures at the 95 percent confidence level using a Monte Carlo simulation model, including the effects of netting and collateral and correlations among risk factors. Some institutions reported that they apply the same modelling methodology for both setting limits and calculating economic capital, and for portfolios of derivatives that these methods are based on Monte Carlo simulations. Where Monte Carlo based models are not currently being used, institutions mentioned their intention to move to them in the near future. Less elaborate modelling is employed for funding transactions; these include historical simulations, variance-covariance, and marked-to-market plus add-ons.

154. One small securities trading bank (a commodities dealer) calculates the mark-to-market exposure taking into account forward prices. It calculates a pre-settlement exposure (PSE) which is equivalent to a credit equivalent exposure (CEE) respectively a potential future exposure. It then calculates the actual settlement exposure, which covers the amounts invoiced and the amounts receivable and payable. It also calculates future settlement

exposure which is equal to future expected cash flows. It does not calculate expected positive exposure.

155. One respondent reported that unsecured exposures were generally measured on a time-to-maturity basis, while the time horizon for collateralised positions would reflect the nature of the margining agreement in place. Where daily margining applies, the liquidation period varies between 1 and 15 days, and is shorter for securities financing trades (typically between 1 and 5 days) than for collateralised derivatives trades (generally approximately 10 days).

4. Securities financing transactions

156. A variety of approaches are used to calculate the exposure value of securities financing transactions. Some countries reported that institutions use net exposures: the value of the security minus the appropriate security-specific haircut. A larger number of institutions use more sophisticated approaches: in most cases, VaR methodologies.

157. One large bank uses the notional amount multiplied by a fixed risk weight .

158. Some banks use a fair value (mark-to-market) approach: exposure equals the current fair value of transactions in the bank's favour plus an instrument-specific add-on for potential exposure from future market movements. When it is not possible to establish the current market price of the underlying securities, the nominal value is used.

159. Other institutions consider the underlying assets, with conservative weightings using haircuts and margin calls.

160. Some institutions that are part of international banking groups use an EPE-method.

161. One large bank uses a 'peak exposure' method for securities financing transactions. This approach is based on Monte Carlo simulation, using several scenarios for each exposure up to its maturity. The value of 'peak exposure' in a specified scenario is the value of the exposure in the scenario estimated at a high percentile.

162. Institutions in one country use a variety approaches to calculate the exposure value for repo-style transactions (and, in some cases, for margin lending). One respondent uses a VaR methodology to simulate changes in value and collateral. Another uses a PFE methodology using simulated exposures based on underlying market risk factors. Another measures exposure net of collateral using Potential Credit Exposure (PCE); the 'relatedness' between the counterparty and asset is a component of the exposure calculation under certain circumstances. PCE is calculated as the sum of the worst-case increase in the price of the securities calculated with 99 percent confidence over the risk interval, plus the margin call threshold, plus the margin given to the counterparty (if any). Another respondent measures exposures for securities financing transactions based on the 95th

percentile stress of the underlying bond. One respondent uses a VaR-based approach for hedge fund clients and a mark-to-market plus add-on approach for non-hedge fund clients (for margin lending it uses a VaR-based approach). Another reported that it uses a mark-to-market plus add-on approach.

5. Intra-day exposures

163. Only a few institutions reported on their approach to intra-day exposures. Most of the respondents value intra-day exposures at 100 percent of their nominal value.

164. One respondent limits intra-day exposures, but does not include them in his economic capital calculations. Another stated that it takes intra-day limits into account as supplemental information but does not defined them as part of total risk.

165. One country reported that its respondents have adopted a variety of approaches to intra-day exposures, which they did not clearly explain. One respondent indicated that these exposures, while tightly managed, are excluded from single-name limits.

6. Settlement exposures

166. Respondents reported a variety of approaches settlement exposures, which they did not always explain clearly. Some respondents, from three different countries, use Monte Carlo simulations; others measure settlement exposures on a gross/net basis; other approaches differ from institution to institution. The following paragraphs provide additional detail on some of the approaches used.

167. One institution uses a Monte Carlo simulation for counterparty portfolios with different currency pairs and at least one currency option. For portfolios that do not contain options, settlement exposure is measured by simple aggregation of the notional amounts.

168. Some institutions measure settlement exposures on a gross/net basis to reflect legal documentation and by balance sheet or nominal value.

169. One country reported the following approaches: some respondents define the amount at risk as the potential loss of having to strike a trade in the market to replace a trade with a counterparty that has failed. One respondent indicated that exposure value is calculated for 'free of payment' settlement exposures, and since the FX portfolio is the largest driver of risk daily, settlement limits are also established. Another indicated that 'regular way' cash trading was not monitored actively except for extended settlement, while for 'free of payment' settlement exposures, the notional amount of the payment needs to be pre-approved.

170. One institution reported that it measures settlement exposure as the amount due from a counterparty during settlement after payment by the institution, and that it measures settlement risk as the settlement exposure multiplied by Default Probability multiplied by Loss Given Default (LGD).

171. One private-client investment manager/stock-broker indicated that settlement risk is the only exposure class relevant to its business.

172. Only a few respondents limit settlement exposures but do not include them in the calculation of economic capital. One institution does not consider settlement exposures in total exposure, although they are monitored for banking counterparties.

7. Structured transactions, look-through approach

173. In broad terms, half of the institutions surveyed use a look-through approach for structured transactions some of the time. In particular, large respondents reported that with regard to structured transactions work is done up-front and the look-through approach is used on a case-by-case basis depending on the information they get to look through the structure. Above all it is difficult to form a clear view of industry practices, because the approaches used differ considerably.

174. One medium-sized bank stated that it does not usually take positions in entities consisting of underlying assets or instruments, but in the rare cases that it does take small positions, it adopts a look-through approach. Other institutions, in particular, small ones, reported that structured transactions do not play an important part in their business.

175. One medium-sized portfolio manager reported that it uses a look-through approach whenever possible. However, the lack of information on the underlying entity often makes a look-through approach impossible, or possible only with a large investment in IT-infrastructure.

176. According to one respondent the number, volume, and variety of complex transactions prevent institutions from developing definitive set of rules. Furthermore, upfront approaches to managing associated concentration risks, embedded in the transaction approval process, seek to understand the structure and the underlying assets, and to assess the economic substance using credit risk models (often economic capital models).

177. One country reported that special purpose entities (SPEs) are generally considered like single-name entities; this also holds for specialised lending operations. In these cases, it is crucial to assess the effect of problems spreading to the promoters of the vehicle. Only large banks deeply involved in the business of credit derivatives use a look-through approach.

178. Another country reported that its respondents have adopted different approaches to exposures to entities or products consisting of underlying assets or items. One respondent indicated that it assesses and reports exposures to ring-fenced SPEs on a 'stand-alone' basis unless it feels that a

look-through approach should be adopted. The examples of look-through given by this respondent involved look-through to a third party, for example where the SPE is owned and consolidated by the seller of the assets, or where there is recourse to a third party. Another respondent indicated that it is necessary to look beyond the structure to identify the counterparties to whom the institution is taking an exposure. This is based on past experience as reflected in group policies; where group policies are not applicable, a case-by-case approach is used. Another respondent indicated that it has adopted a two fold approach: treating the SPE as a stand-alone entity in the credit system, but also capturing exposures to underlying reference names. A different approach is adopted for mutual funds, separating out the asset manager from the group to which it belongs "with the indirect principals set up as entities under the agent." Another respondent links the SPE to the issuer of the bond held in the SPE. Another stated that "structured products are disaggregated and treated according to component parts."

179. Some institutions measure the two most junior tranches in securitisations as the double of their respective amounts provided that the institution can identify the counterparties for the transferred assets, and up to the limit of the exposure vis-à-vis those entities that existed before the securitisation operation.

180. The respondents in one country treat structured transactions on a case-by-case basis; transactions are disaggregated and measured according to their component parts.

181. Some banks include such exposures in the calculation of concentration risk to any participant, either on a proportional basis (when the management of the entity is considered self-governing) or on a full basis (when the participant has a significant influence over the management of the entity).

182. One country reported that credit default swaps (in cases where the institution is the seller of protection) are valued at their notional amount, while equities (almost exclusively in the trading book) are valued at their market value.

183. In calculating the value of the exposure, consideration is given, where applicable, to the underlying assets or counterparties, the structure of the vehicle, external ratings, trustees, fund managers and loan originators.

184. According to one respondent, credit derivatives are netted with bonds issued by the same counterparty.

Part 4. 'Connected' counterparties

185. Most institutions responding to the survey measure and manage concentration risks on the basis of connected counterparties. Some respondents – mostly smaller institutions – do not consider connected counterparties.

1. How do institutions define 'connectedness' of counterparties?

186. Nearly all institutions use a definition of connected counterparties that incorporates the definition of 'group of connected clients' in Article 4, Paragraph 45 of Directive 2006/48/EC. Many institutions use a broader definition of connectedness.

2. How do institutions determine connectedness?

187. The methods used to determine whether two counterparties are connected vary across institutions.

188. Connectedness is often determined on the basis of common/legal direct or indirect ownership, management control, or financial dependencies. In broad terms, 50 percent or greater ownership implies connectedness. Furthermore, many institutions consider two parties or clients to be connected if one of them has some form of influence over the other. A mutual relationship is often not required.

189. One small portfolio manager takes into account any financial, legal, management quality, or product relationship (product liability) when determining connectedness.

190. One country reported that connectedness is subjective and may include multiple aspects, such as companies with a significant share of their assets invested in another entity, significant financing dependency, family links between significant shareholders, or the management of legally independent companies which otherwise appear to be unrelated.

191. In another country, all banks and banking groups define 'economic group' as two or more entities which are connected to each other by a legal relationship, an economic relationship, or both. Some banks do not consider economic relationships when the nominal amount of the exposure is below a threshold amount.

192. Many respondents, of all sizes, determine connectedness on a case-by-case basis, on the basis of business dependencies (for example, customer-supplier relationships), joint management, joint collateral, financial soundness, vested real power, or economic or other risk-based interdependences. In particular, one respondent indicated that 'Financial soundness' was a key concept because the financial standing of one company might affect another.

193. One country cited as a further specific example of connected clients the individual entities of a housing association and the housing association itself.

194. One country noted the problems posed when the connectedness of corporate counterparties is extensive and increasing; within the context of

that country's economy, this makes identification of connected clients challenging.

195. In some cases, respondents find it difficult to determine economic connectedness. Difficulties arise, for example, when one counterparty has less than majority share ownership in another entity but exercises significant influence over the other's strategy or key appointments. In such cases, banks commonly look beyond legal structures in order to determine whether control is exercised.

3. What procedures do institutions use to monitor connectedness?

196. The connectedness of counterparties is generally assessed on a regular basis, either at the time of the annual review or when the institution is notified by the client of changes to structures or arrangements. Some large institutions reported that connectedness is often monitored as an integrated part of the rating process.

197. In some circumstances, connectedness is monitored by an independent data-management team, whose responsibilities include managing and documenting linkages between entities.

198. It is standard procedure in most banks, when counterparties are considered to be connected, to aggregate credit exposures to those counterparties. In these cases, applications for credit limits to all connected counterparties are aggregated by a bank's controlling unit for exposure assessment and approval. Some large banks reported that they would not consider it appropriate to model dependencies inside groups of connected clients.

199. Some institutions are aware of the importance of the quality of the databases containing information on links between counterparties. Such data may be gathered from external databases or from information gathered when the application file is introduced.

200. In one country, banks and banking groups that are implementing the IRB Approach under the CRD are developing databases of economic groups and connected clients. These banks are paying more attention than in the past to the definition, management, and monitoring of maps of connected clients. They are obtaining data from several external databases maintained by local Chambers of Commerce and by specialised data providers, along with information received from a national bank network or from news reports.

201. Some banks turn to the company register or to the client itself for information when they suspect that one client is connected to another. Other banks consult the information that institutions are required to provide to central credit registers.

Part 5: Group-level issues

1. Measurement and management of concentration risks within the group

202. Most institutions measure and manage concentration risks both at group and at single-entity level, where applicable. However, large banks, in particular, reported that it would be common practice to manage and set limits only at group level. These limits are often allocated to different business lines and legal entities. At many large institutions, policies for measuring and managing concentration risks are determined by the head of the group.

203. Some respondents reported that internal limits are also set at the sub-group level. Respondents from one country have allocated different sub-limits to different business units, legal entities, and/or business lines and portfolios.

204. Institutions in another country tend to establish risk and control management at group level. However, if the group has subsidiaries in markets that differ strikingly from the group's main markets (for example, a European group with subsidiaries in Africa), or if IT systems do not cover the entire group, there may be exceptions.

205. Many banks which are part of banking groups apply concentration risk measurement and management policies dictated by the parent bank, but set limits at the individual entity level as well. All members of the group must provide the parent bank with data about their exposures to all of their clients on a regular basis. They must also provide the parent bank with data on credit grades, customers' performance, etc. Upper limits are established for exposures to a particular client or group of connected clients, based on criteria relating to the client's overall ability to service the given level of debt. Established limits are then applied to all members of the banking group. The same methodologies for establishing limits are enforced throughout the entire group.

206. One group adopts a Large Credit Exposure Policy (LCEP), which sets exposure constraints for customer groups such as corporates, banks, governments, countries, and industry sectors. Each operational member of the group must also create its own LCEP in line with that of the group. Any member of the group wishing to provide facilities must approve limits in line with group policy. The aggregate of the limits made available by each group member creates the group’s concentration, which is applicable at the single counterparty, country, and industry level.

2. Approaches taken by institutions to intra group exposures

207. In broad terms, half of the respondents reported that they include intra-group exposures in their measurement and management of concentration risks. Some of these institutions include intra-group exposures in almost the same way as for other concentration risks. Large groups, in particular, do not appear to set limits on intra-group exposures as part of their credit risk management. Instead, they manage intra-group exposures as part of their overall management of resource allocation within the group.

208. A significant number of institutions do not find it necessary to consider intra-group exposures at all, as long as the group as a whole is viable. Others do not consider intra-group exposures if the borrowing and lending entities are both included in the scope of consolidation.

209. Some institutions monitor intra-group exposures but do not subject them to limits or capital allocation.

210. One respondent reported that it sets special intra-group limits according (mainly) to the business needs of a given entity within the group.

211. In many institutions, intra-group exposures commonly lie outside the scope of the credit risk function. They are often the responsibility of corporate treasury, which liaises with financial accounting on compliance with regulatory limits. Many respondents consider there to be minimal default risk in intra-group exposures, and therefore see limited need for active management. They do not consider the risk to be purely, or even primarily, a credit risk, because the banks control both sides of the transaction. One respondent indicated that economic capital calculations are made at the group level and thus ignore intra-group exposures. One large bank discussed in detail the inappropriateness of distinctions between domestic and cross-border intra-group exposures.

212. Some institutions reported that they sometimes take cross border intra-group exposures into accounted in estimating country risk.

Part 6. Credit risk mitigation

213. Many respondents reported that credit risk mitigation (CRM) is integral to determining exposure amounts for risk management purposes. CRM techniques are generally used to reduce exposures for risk measurement, monitoring and management purposes. Techniques are often applied where exposure without these techniques would be significantly above the firms' credit risk appetite. The sophistication of the methods used varies depending on the size of the institution.

214. The more sophisticated institutions – typically those planning to use the IRB approach – use a wider range of eligible collateral. These institutions review the level of credit risk associated with the counterparty or the structure of the facility and consider credit risk mitigation accordingly.

215. Institutions place significant importance on legal certainty and enforceability, to ensure that the institution's ability to take possession of and sell a mitigant can withstand any legal challenge.

216. Some larger and more sophisticated institutions indicated that, apart from counterparty risk for OTC derivatives, collateral does not reduce the exposure, but rather the LGD. These institutions may consider any type of collateral, provided that the applicable credit committee has validated and justified its relevancy, its compliance with internal procedures and credit and rating policies, and its valuation into LGD.

217. Several countries reported that their smaller institutions did not take CRM into account when calculating exposures. Those that do take CRM into account tend to use only the collateral outlined in the LE regulatory regime.

218. Most respondents indicated that CRM is specified in the institution’s credit and concentration risk policies. CRM is often assessed as part of the credit approval process, and agreed and documented post-approval. The main consideration for banks when taking mitigation is that the mitigant will deliver the expected level of reduction to potential losses if and when required (for example, the sale proceeds of a property will be sufficient to cover the outstanding balance on a mortgage, even allowing for a downturn in property values and the need for a forced sale).

219. Funded and unfunded mitigants may include:

- Cash and pledged deposits
- Financial assets
- Physical assets
- Receivables
- Guarantees
- Credit derivatives
- Netting
- Insurance
- Letters of credit
- Repurchase agreements

220. The industry (those larger institutions) indicated that netting arrangements are a key method for reducing exposures and an area which is evolving.

221. The larger institutions also indicated that this area of CRM is constantly evolving and that their preference would be to expand the eligible financial collateral while at the same time maintaining flexibility due to the ongoing emergence of new credit risk mitigating products.

1. Collateral

222. The types of collateral recognised in large exposure calculations include cash, government bonds, financial collateral, US mortgage agency paper, receivables, and physical assets. Many respondents noted a preference for very liquid assets, with some indicating a developing use of other assets. Respondents appear willing to recognise collateral for internal purposes that may not be recognised for regulatory purposes. Where the collateral is acceptable and the appropriate documentation is in place, banks usually deduct the value of the collateral from the exposure. Collateral asset values must be independent from the counterparty risk and liquid in order to be considered suitable for reducing single-name concentration risk.

223. One respondent noted that non-cash collateral or collateral that is not highly liquid (such as liens on real estate assets, assignment of receivables, etc.) generally may not be used to reduce single-name concentration risk but may still provide additional comfort.

224. Commodities trading firms indicated that they use the following CRM techniques: bank guarantees, netting (close-out netting, payment/delivery netting), letter of comfort, and cash collateral.

225. Respondents generally have policies and procedures to address issues such as acceptable collateral, legal risk and uncertainty, the value of the mitigant not being fully realisable, etc.

2. Haircuts

226. In more sophisticated institutions – typically those planning to use the IRB approach – there is no systematic distinction in terms of CRM-calculation between large exposures and other exposures. Most banks document the types of acceptable mitigants (in the case of many smaller institutions, only collateral and guarantees listed as part of the LE regime). A few of smaller institutions do not recognise any credit risk mitigation methods. The extent to which haircuts are applied and the arrangements for perfecting legal certainty and enforceability are usually included in internal policies and procedures. Haircuts are applied based on the expected future value, which is sometimes determined by a model. The extent of haircuts is based on past experience, expectations of future movements, and the level of credit risk appetite. For example, a credit policy may specify a maximum loan-to-property-value of 80 percent, but this may be increased to 85 percent when property prices are increasing and expected to continue to do so.

3. Top-slicing

227. Some respondents in one country noted that although the practice of applying a limited amount of collateral to reduce an exposure below a specified limit was not supported by that country's regulation, they felt it is nonetheless a legitimate and effective risk-management tool.

4. Netting

228. Netting agreements are used to reduce credit exposure and are based on the existence of a legal agreement and positive legal opinion around the enforceability of that agreement, Substantial due diligence is usually conducted to confirm the legal enforceability. Where an opinion exists, then positive and negative exposures can be offset for all transactions covered by the relevant agreement.

229. In nearly all reported cases, derivatives exposures are calculated on a net basis, i.e. the impact of netting, collateral agreements, and/or purchased protection is included as part of the exposure simulation.

230. Netting is applied both to mark-to-market transactions and to collateral. Where more than one transaction falls within the scope of a close-out netting agreement, it is common industry practice to net mark-to-market values against counterparties.

231. The approach to collateral and netting for OTC derivatives and repo-style transactions is detailed in Part 3 of this report. Many institutions have a policy of encouraging bilateral and multilateral netting agreements for their derivatives and repo-style transactions. Respondents emphasised that the key component in such arrangements is the legal enforceability of the netting agreement.

232. One respondent indicated that where a close-out netting agreement is in place, it nets positions with a counterparty, using mark-to-market values. Credit-equivalent exposure is calculated for the netting set, taking into account market risk portfolio effects on the set of trades.

5. Unfunded credit protection

233. Most respondents use unfunded credit protection to manage and mitigate credit risk, mainly in the form of guarantees. Larger, more sophisticated banks tend also to use credit derivatives (including in particular credit default swaps and total return swaps). They use a 'substitution approach' (PD-adjustment) for unfunded protection, as opposed to funded protection, which reduces LGD.

234. Some institutions assign the rating of the collateral provider to the secured exposure, rather than the rating of the obligor, effectively transferring the risk of the secured portion of the exposure to the collateral provider.

235. One respondent noted that where the guarantee was from an entity in the same group as the counterparty, then the exposure, although considered guaranteed, would still be recorded against the primary counterparty. Another respondent indicated that in some cases the exposure amount would be multiplied by a risk factor less than 1 to reflect 'double default' effects. This risk factor varies by obligor rating and tenor.

236. Many respondents have policies relating to the nature of the guarantee and the creditworthiness of the guarantor: for example, in order to be recognised, a guarantor must be rated more highly than the counterparty, and an insurer must be rated A- or better internally.

6. Other types of collateral

237. One respondent noted that it uses 'break clauses' to reduce the 'credit-equivalent amount' of a trade by reducing its tenor (duration). Another respondent mentioned the use of securitisation. The use of off-setting trades was also mentioned, as well as the selling of loans in the secondary market.

Private client investment manager and stock broker

238. One respondent involved in private investment management and brokerage activities stated that, due to the nature of its business, its only credit risk is settlement risk. It defines the amount at risk as the potential loss of having to strike a trade in the market to replace a trade with a counterparty that has failed. Time horizons of their settlement exposures are normally only a few days. When the settlement horizon exceeds ten days, the respondent mitigates the increased client-side risk by requiring cash or securities from the client.

Investment management firms

239. Responses from investment management firms indicated that, fees owed may be collected by direct debit and client agreements. Client agreements frequently have clauses directing custodians to settle management fees before the client's assets are returned. If disputes arise over fees, there is often a clause requiring the amounts to be put in an escrow account pending resolution.

Factoring companies

240. In the factoring industry, insurance policies are of increasing importance. When certain specified conditions are met, they result in an effective transfer of counterparty risk for the portfolio from the debtors to the insurer.

7. Indirect concentration risk

241. Indirect concentration risk is single-name or other concentration risk arising from indirect exposures to the issuers of collateral or the providers of unfunded credit protection. The treatment of indirect concentration risk varies widely across institutions. In general, only larger institutions measure and monitor indirect concentration risk.

242. Some institutions treat indirect concentrations in the same way as direct exposures: the credit quality of the guarantor has to be assessed and the

risk reflected in the risk weight, capital should be charged, and there is a limit for the guarantor as there is for the obligor. Other institutions do not take indirect risk into account at all. A few smaller institutions indicated that a guarantee will be treated as an exposure to the guarantor only if this was the only reason the exposure was approved.

243. Several small to medium-sized institutions noted that it is difficult for internal systems to identify indirect concentrations. Some respondents that do not take indirect concentration risk into account indicated that their collateral typically takes the form of cash or high-quality government securities and therefore indirect concentration is not an issue.

244. One respondent argued strongly against the incorporation of indirect risk. This respondent noted that, while transferring concentration risk from the obligor to the issuer of the pledged collateral could give rise to a concentration risk on the issuer, there would have to be a double default for the risk actually to materialise.

Part 7. Governance and reporting

245. Almost all institutions apply ceilings or limits, which for smaller institutions tend to be identical to regulatory limits. Most respondents indicated that they have policies and procedures that require committee review and/or delegated authority approved by the Board of Directors prior to granting loans that could breach large exposure limits – particularly single-name limits.

246. Some larger institutions indicated that they have escalating processes to ensure authority to approve extensions and breaches of soft limits. The requirement for rapid response is reflected in their governance frameworks. They emphasized that it is not always about limits – it is about proper governance procedures.

247. The creditworthiness of the counterparty is often taken into account, but not always (particularly at smaller institutions). Several respondents indicated that this process is automated, thereby indicating at the outset what level of management approval is needed for the extension of credit. Thus, single-name concentration appears to be fully integrated into the credit decision process at larger institutions. Larger institutions also tend to have a clearly defined delegation of functions on credit issues, clearly defined internal limits (whether 'soft' or 'hard'), and clear policies for ongoing monitoring and reporting of limits and internal audit review of the largest exposures. Many large institutions reported that the unit in charge of monitoring, controlling, and reporting credit operations and credit risks is independent of business and operating units. Compliance is monitored on a regular basis. For some exposures, such as overdrafts, monitoring may be performed daily or even more frequently.

248. Key sectors are identified for management and monitoring. Portfolio triggers or caps are set for industry sectors. Triggers may be used to initiate a review of credit appetite. Caps indicating where further business

generally should not be undertaken are typically set by an executive management committee. Reports are produced on a regular basis – usually monthly. In addition, exception reports are provided to senior management. Portfolio reports are also produced.

249. While institutions (particularly small and medium-sized ones) often base their internal limits on regulatory requirements, they often have additional 'soft' limits which they use as monitoring triggers. Larger institutions often set limits that are significantly tighter than those specified in the LE regulatory regime. The following governance practices were reported:

1. Individual counterparty exposures

250. Large and medium-sized institutions tend to have formal policies and procedures for monitoring and reporting large exposures and concentration risks. Limits are usually set by an executive body. Larger institutions indicated that corporate customers usually have an account officer who monitors the customer's financial position and analyzes financial developments to determine their potential impact on exposures. Smaller institutions indicated that they adhere closely to the regulatory guidelines for these purposes, with at least one indicating that it uses an 'early warning system' based on the periodic verification of certain indicators to monitor the evolution of large exposures and intervene in the event of deterioration.

251. One bank indicated that counterparty and country risk limits are monitored and managed by the credit department and elevated to senior management on an exception basis.

2. Connected clients

252. Connected clients can be reviewed anywhere from annually (for smaller institutions) to daily (for larger institutions). Risk committees often carry out cross-business line assessments of concentrations within the group portfolio.

3. Sector and geographic concentrations

253. Particularly at smaller institutions, there are few formal approaches to monitoring sectoral or geographic concentrations.

254. Limits are often set by a designated credit committee and updated periodically to reflect sectoral risk profiles. Several respondents indicated that they have 'concentration committees' that monitor the portfolio in order to detect concentrations and reduce the institution's vulnerability to large unanticipated credit losses. Some institutions indicated that sector upgrades or downgrades may prompt an immediate reduction or increase in concentration limits.

255. Sectoral and geographic limits are usually set by the executive committee level or its designee. Country risk appetite may be lowered by a country risk advisory forum on a case-by-case basis.

4. Breaches of internal limits

256. Most respondents indicated that breaches of internal limits be reported immediately to whatever level of committee or management is designated by the institution. In some larger institutions, responsible delegates can approve breaches up to pre-determined limits. Breaches above those limits tend to require presentation to the Board of Directors or a specified executive committee.

257. One medium-sized institution indicated that when limits are exceeded, the executive board decides on and initiates the further measures to be taken.

258. Another respondent indicated that single-name limits are approved in a 'concentration meeting' which brings together senior managers of the corporate investment bank and the risk division. For top names, the concentration limit must be validated by the 'large exposures committee' which brings together the Chairman and/or the General Manager, the senior managers of the business units, and the risk division. Country and industry sector limits are 'hard' limits. Actual exposures can exceed target single-name concentration risk limits, in which case the over-concentration is managed over time.

259. One large bank reported that it sets and reviews limits annually as part of its risk appetite. Recommendations are developed within the risk function and agreed at senior group risk committee level. The institution monitors individual name limits and country risk on an ongoing basis. Monthly monitoring of other limits is considered sufficient unless activities are close to the limit. Senior management reviews any approved exemptions on a monthly basis.

260. Another large bank indicated that its counterparty and country risk limits are monitored and managed by the credit department and elevated to senior management on an exception basis. Breaches of limits are raised to different levels in the organisation, depending on the threshold breached. Monitoring frequency is influenced by speed of trading/change in exposures and portfolio credit quality.

261. One large bank indicated that single-name concentrations for substantial exposures are managed by a series of credit committees with increasing levels of authority, culminating in a top-level committee which usually comprises main board members. The bank has policies and procedures for the review and approval (or denial) of loans which will or may breach limits. Some decisions are automated (for example, regarding credit card limits). Triggers may be used to initiate a review of credit appetite. Caps indicating where further business generally should not be undertaken are set by a group executive management committee.

262. One respondent uses a structure which it calls 'individual credit authority' as the primary method for authorizing the extension and approval of credit to counterparties, issuers, and countries. Credit authority is derived from a credit risk framework and is granted only to experienced credit analysts who are independent of the business units and have demonstrated knowledge of risk management, including product risk and counterparty analysis. The global head of credit has primary responsibility for defining and approving changes to all of the credit authority levels and the respective limits, with the exception of certain matters which must go to a global risk oversight committee.

263. Some respondents emphasised the more intensive monitoring of any exposures which exceed the internally defined 'large exposure' criterion. One respondent indicated that it monitors exposures that exceed two percent of capital; another indicated that it monitors exposures over €30 million on a quarterly basis. Other variations were noted; for example, in one country, large exposure is defined as ten percent of total capital, and all exposures above this level are reported and monitored.

5. Reporting practices

264. Counterparty exposures are reported to the management hierarchy on a regular basis: weekly, monthly, quarterly, or, for smaller institutions, according to regulatory requirements. The reporting requirements tend to be accelerated in the event of breaches of internal limits. The frequency can vary according to the type and level of the exposure and the speed of business.

265. Some larger institutions conduct monitor exposures at least quarterly, and often an audit committee examines the larger counterparty exposures, country and sector exposures, and exposures that have changed significantly or defaulted.

266. A few institutions stated that large exposures related to market risks were reported weekly, while those relating to credit risk may be reported less frequently (monthly).

267. The information supplied to internal review and monitoring committees varies in detail and sophistication. At some institutions, reports include VaR analysis. It is common practice for any excesses to be monitored closely and reported to senior management. At some institutions, the internal audit function is also involved in monitoring large exposures.

268. Reporting information can include lists of the 10, 20 or 50 largest exposures by single name. Large exposures may also be reported by sector, product, and type of security. At one institution, a report on large exposures is provided twice monthly to the chair of the board of directors, the CEO, and other key managers. Another institution uses an 'early warning system' based on internal indicators to pre-empt any deterioration.

6. Risk strategies in general

269. Most large institutions responding to the survey indicated that their board or executive committee approves risk management strategy annually, outlining risk appetite and credit risk strategies for the year.

270. Credit risk policies cover portfolio composition, diversification, and customer selection, as well as the use of collateral and covenants. Larger institutions may have a risk management department that prepares a corporate risk analysis for the executive board. These reports review and analyse general compliance with credit risk policies, and analyse the amount, distribution, and quality of exposures.

Part 8: Regulatory environment

271. There appears to be a general consensus among banking groups and larger institutions that the risk weights for the large exposures regime should be tied to the risk weights used in the capital regime, and, in particular, should take into account counterparty creditworthiness and transaction maturity.

272. A distinction might be made between larger more advanced banks using the IRB approach and smaller banks using the Standardised approach.

273. Particularly at larger institutions, there appears to be a gap between the measurement, management, and reporting of concentration risks for internal purposes, and the limits and reporting requirements contained in the CRD and national regulations. This gap renders the current regime, as one group put it, as "out-of-date, inflexible and not risk-sensitive". The industry's approach tends to favour a more sophisticated, risk-sensitive approach.

274. For example, several respondents indicated the need to address the treatment of derivatives and other modern financial instruments in the LE regulatory regime, with one country association mentioning that the need for updating the LE regime in this area was "urgent."

275. Some respondents questioned the need for a LE regime in a Pillar 2 environment, arguing that concentration risks are identified and captured in Pillar 2.

276. Other institutions noted that the IRB approach factors in large exposures and other concentrations. Institutions that plan to use the IRB approach, along with several banking federations, felt that a new and more unified approach to exposure and concentration issues was needed, and that this approach should be aligned with the principles of the CRD.

277. There was a general sense of the industry that intra-group exposure limits are unduly constraining, given that risk management is conducted at the group level.

278. Many institutions and banking federations advocated more streamlined reporting requirements in national jurisdictions, as a matter of both regulatory burden and competitive equity.

279. There was a general sense of a lack of harmonization across the EU, in the LE regime generally, and concerning intra-group exposures and the handling of limit breaches in particular.

280. One large financial conglomerate asked that banks be allowed to apply the standardised approach to exposures for purposes of determining large exposures during the transition period to Basel II and as an interim procedure until such time as the LE regime is updated.

1. Effectiveness of the LE regime

281. Most smaller respondents indicated that they feel the current regulatory regime is sufficient and that they rely on it for their monitoring of large exposures. Some felt that the current regime achieves a good trade-off between the cost of compliance and the level of risk, and that the current limits are satisfactory from both a prudential and a level playing field perspective. Several institutions consider it successful in preventing major problems for banks, and relatively simple to apply.

282. Some respondents – mainly larger institutions – indicated that they would prefer the LE regime to be more closely aligned with the new capital regime, and in particular for it to incorporate the risk weights derived from internal ratings in the IRB approach. However, several of these respondents also indicated they would prefer that authorities wait for a few years – until after the CRD has been fully implemented – before making any changes to the LE rules.

283. Several very large, sophisticated institutions indicated they do not really use the LE regime. They rely instead on their own internal limits (which are generally much stricter than those in the LE regime) and they often combined them with concentration risk determinations.

284. Some larger institutions believe their approaches to single-name concentration risk to be more risk sensitive than the regulatory regime – for example, in the use of other mandate and scale limits to cap exposure to particular industries, products, and geographical regions).

285. Several institutions and industry associations commented that the LE regime is almost entirely based on single-name concentrations, and fails to address other elements of concentration risk such as geographic or sectoral risk. However, the industry is generally opposed to extending the current regime to regulate other concentration risks.

286. A number of institutions stated that the inflexible nature of the LE limits conflicts with their internal risk standards. They pointed out that the regulatory limits are binding in areas considered relatively low-risk (such as intra-group exposures), yet are not binding in areas where risk is higher

(such as emerging market risk). Furthermore, the constant monitoring and maintenance of the limits and the frequent need to use capital and/or collateral to remain within the regulatory constraints increases operational costs. Furthermore, the limits result in a capital/collateral allocation that is not risk-sensitive, and therefore does not represent an efficient use of scarce resources. In many sectors, the regime constrains commercially viable business or increases the cost of doing business.

287. At least two institutions argued that the 25 percent hard limit is too high and that it could lead to an unacceptable single counterparty concentration in the absence of significant mitigants. They view the 25 percent limit as a minimum standard and noted that their own internal approaches, based on LGD, escalate exposures to a senior level earlier than the LE regime.

288. Some larger institutions suggested that regulators might want to take into account concerns about the LE regime at both the micro-prudential and macro-prudential levels. At the micro-prudential level, large banks benefit from natural diversification and are unlikely to acquire single-name exposures of a size that could threaten solvency; this is not the case for small firms. The respondents considered that it would therefore be unwise for the regulator to adopt a 'one size fits all' approach. At the macro-prudential level, they noted that LE rules can raise systemic issues.

289. One respondent stressed the need to move towards more cross-sectoral consistency i.e. to make the large exposure regime in the banking sector and concentration risks in the insurance sector more aligned.

2. Appropriateness of applicability of LE regime to certain groups

Investment management firms

290. There was a general consensus among investment advisors, institutions with trading book activities, and fund operators that the LE regime does not recognise the distinctive risk characteristics of these businesses.

291. In particular, private equity firms and investment management firms questioned the appropriateness of applying the LE regime to their business models due to their fundamentally different financial business model. Their 'exposures' take the form of accrued fees. In the case of small start-up companies with only a few customers, accrued fees to a handful of clients can require a capital level well beyond the economic capital needed to operate such firms.

292. The responses from investment management firms strongly opposed the application of the current LE regime to their businesses. They argued that the following characteristics of the investment management business should be recognised:

    a. Client assets are segregated from the firm's assets and are often held by an independent custodian. Investment management firms are permitted to undertake only a limited number of activities, and are not

permitted to underwrite securities or to deal on their own account. Funds generally consist of diversified, highly-rated investments.

b. Unpaid fees may qualify as large exposures, but has the effect of punishing success, since the better the investment has performed, the larger the fee, and therefore the larger the exposure. One investment management firm noted that it is very unlikely that a client would not pay the fees due where the investment manager has a discretionary investment mandate, because the fees are paid out of the managed assets.

Energy trading firms

293. A group representing energy trading firms questioned whether the LE regime should apply to them. They noted that their exposures result from common invoicing practices combined with an industry structure that is characterized by a few very large customers and counterparties on the wholesale level.

Commodity trading firms

294. One small commodity trading firm considers the regulatory framework for credit risk to be inappropriate for the commodity business.

Money market funds

295. Some investment managers, along with their association, argued that exposures to triple-A rated money market funds should be exempt from large exposure limits, in recognition of their inherent diversification, ring fencing, and high quality. They also suggested that there may be some circumstances where a look-through approach is warranted.

Factoring companies

296. One group recommended that the concentration limits for factoring companies should take into account the following distinctive characteristics of the factoring business:

a. The fact that the assets of factoring companies consist of trade credits, the payment of which depends predominantly on the sale of the products in their markets rather than on the solvency of the debtor.

b. The short duration of exposures, which allows the factor to alter its risk exposure quickly.

c. The structural presence of a second counterparty (transferor or debtor), which creates a structural subdivision into several commercial relationships, independent of the accounting configuration of the exposure.

d. The use of mitigation instruments, and insurance in particular.

3. Application and consistency of the LE regime across different member states

297. A number of respondents noted a lack of harmonisation in LE rules across the European countries in which they operate. For example, national supervisors have implemented different national discretions and have adopted different interpretations of exemptions (such as the weighting of residual versus original maturities). These institutions' regulatory LE procedures are largely manual, in order to cater to the different rules applied in each country. This increases administrative costs and complicates cross-border business.

298. Some respondents said that this issue had been highlighted in CEBS' recent survey of supervisory practices, particularly regarding the use of a 'one size fits all' approach to the management of concentration risk. The industry commented that legislators should avoid the relatively easy 'quick fix' of limiting the exemptions in the desire to achieve harmonisation, as this will reduce risk-sensitivity.

299. A number of institutions commented that a major difference in the application of LE rules across Europe is the availability of intra-group exemptions.

300. Some federations and reporting institutions believe that the decision-making requirements for large exposures need to be harmonised internationally, not just within the EU. They suggest that non-EU members of the Basel Committee on Banking Supervision should be included in a stock-taking exercise.

301. Some respondents expressed an interest in harmonising how each member state treats breaches of limits, and expressed disappointment that CEBS' supervisory stock-taking exercise did not address this issue specifically.

4. Should the LE regime capture sectoral and geographic concentration risks?

302. The larger institutions reported that they already capture sectoral and geographic correlations in their models. However, they are opposed to formal regulations that set 'hard' sectoral and geographic limits, which they felt might be difficult to harmonise at the European level.

303. At least one small institution expressed the view that the LE regime should capture and limit other concentration risks.

304. One institution explained its methodology for combining LE and concentration risk exposure calculations, which involves assigning different correlation factors for concentration risk in its calculation of economic capital.

305. Other suggestions included that the LE regulatory framework should provide guidelines on effective concentration risk management without setting

stringent and detailed limits, thus allowing institutions greater flexibility in operating within the framework.

306. As noted earlier, some respondents expressed a preference for integrating the LE scheme into the Pillar 2 framework for concentration risks. They felt there was no need for a detailed regulation on this subject, because it would be fully integrated into the ICAAP process.